

ABSTRACT OF THE DISCLOSURE

There is provided a radiation image pick-up device with a large size, in which detection efficiency, light utilization efficiency, and a yield can be improved, high speed operation can be realized, and a signal to noise ratio is improved. The radiation image pick-up device includes a phosphor for converting radiations into light, a semiconductor layer for converting the radiations into charges and converting the light from the phosphor into charges, TFTs for reading signals corresponding to stored charges, and output lines for outputting the charges read by the TFTs. The semiconductor layer, charge storage capacitors, the TFTs, and the output lines are formed respectively on an insulating substrate. The phosphor is laminated on the semiconductor layer and the semiconductor layer is laminated on a formation surface of the charge storage capacitors, the TFTs, and the output lines respectively on the insulating substrate. The semiconductor layer is electrically connected with the charge storage capacitors on the insulating substrate through connection electrodes.